MiRNAs are negative regulators of protein coding genes. Cancer cell survival, metastasis, differentiation and tumor progression have been regulated by a lot of miRNAs having very important functions. Recently, miR-122-5p was proved to play a tumor suppressor role in breast cancer. Apoptosis which takes a crucial act to conserve homeostasis in tissue is the most frequent type of cell death in multicellular living systems. Defects in the regulation of cell death via apoptosis have been associated with many disorders such as cancer. Previous studies suggest that trastuzumab, which shows its activity through its antibody characteristics affecting the immunological control of neoplastic HER2+ breast cancer cells, exhibits an anti-proliferative effect in HER2+ breast cancer cells by triggering caspase-dependent apoptosis. So, we aimed to analyze advancing of apoptosis by miR-122-5p in combination with trastuzumab in the SKBR3 (HER2+) cell line. For this purpose, we firstly transfected SKBR3 cells with miR-122-5p mimic, inhibitor and miRNA negative control for 48 hours. Afterwards, 0.5 µM trastuzumab was administered to miRNA transfected and non-transfected SKBR3 cells for 24 hours. AnnexinV and 7AAD emissions were detected in the FL1 and FL2 channels of a FACSCalibur flow cytometer (Becton-Dickinson, USA), respectively. The data were analyzed using CellQuest program from Becton-Dickinson. We revealed significantly more apoptotic cells upon miR-122-5p administration in combination with trastuzumab and also less apoptotic cells upon miR-122-5p interference with inhibitor mRNA in combination with trastuzumab. The number of apoptosis cells were 34.9 %, 38.9 %, 48.8 % and 27.7 % in trastuzumab, trastuzumab + miR-122-5p-NC, trastuzumab + miR-122-5p-mimic and trastuzumab + miR-122-5p-inhibitor administrations, respectively. All in all, the apoptosis advancing effect of miR-122-5p treatment in combination with trastuzumab may provide new therapeutic treatment choices for HER2+ breast cancer cases.

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